Team 7 – Project 3

Project Topic - Bluebikes Management System

Team Members

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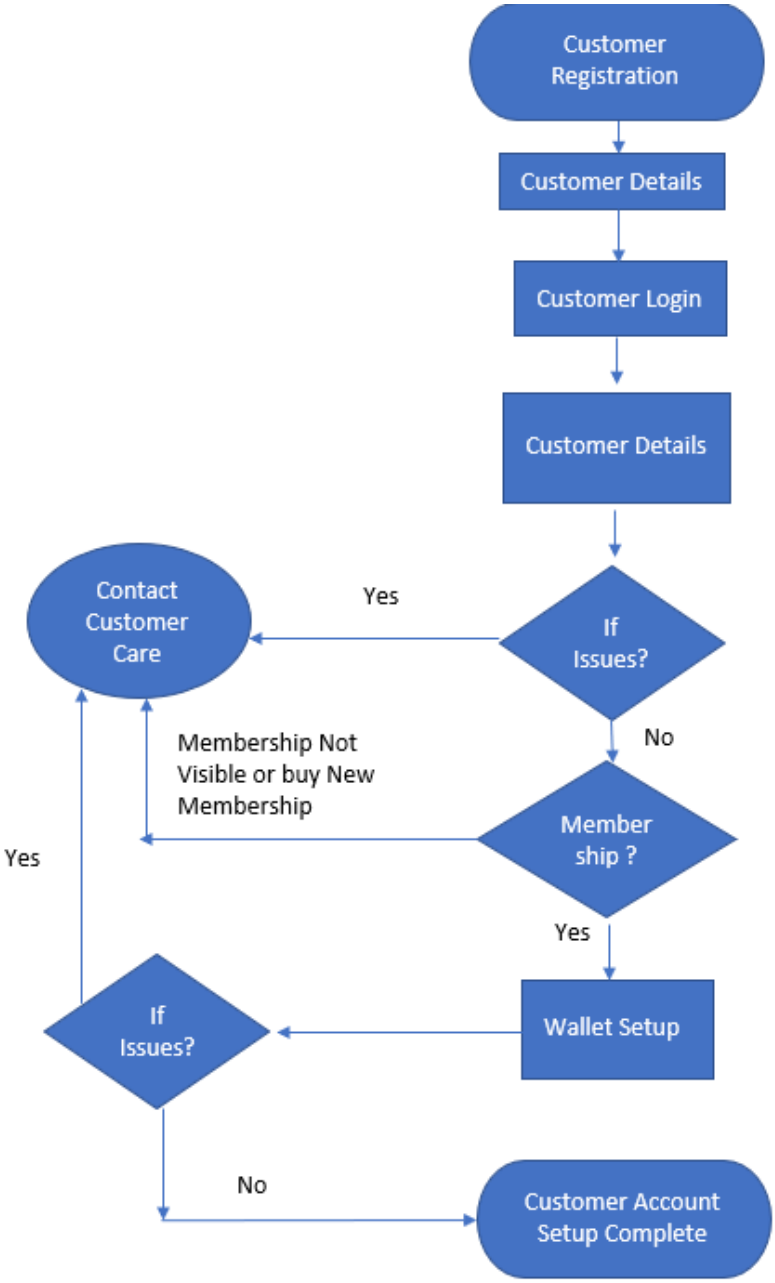
Business Rules

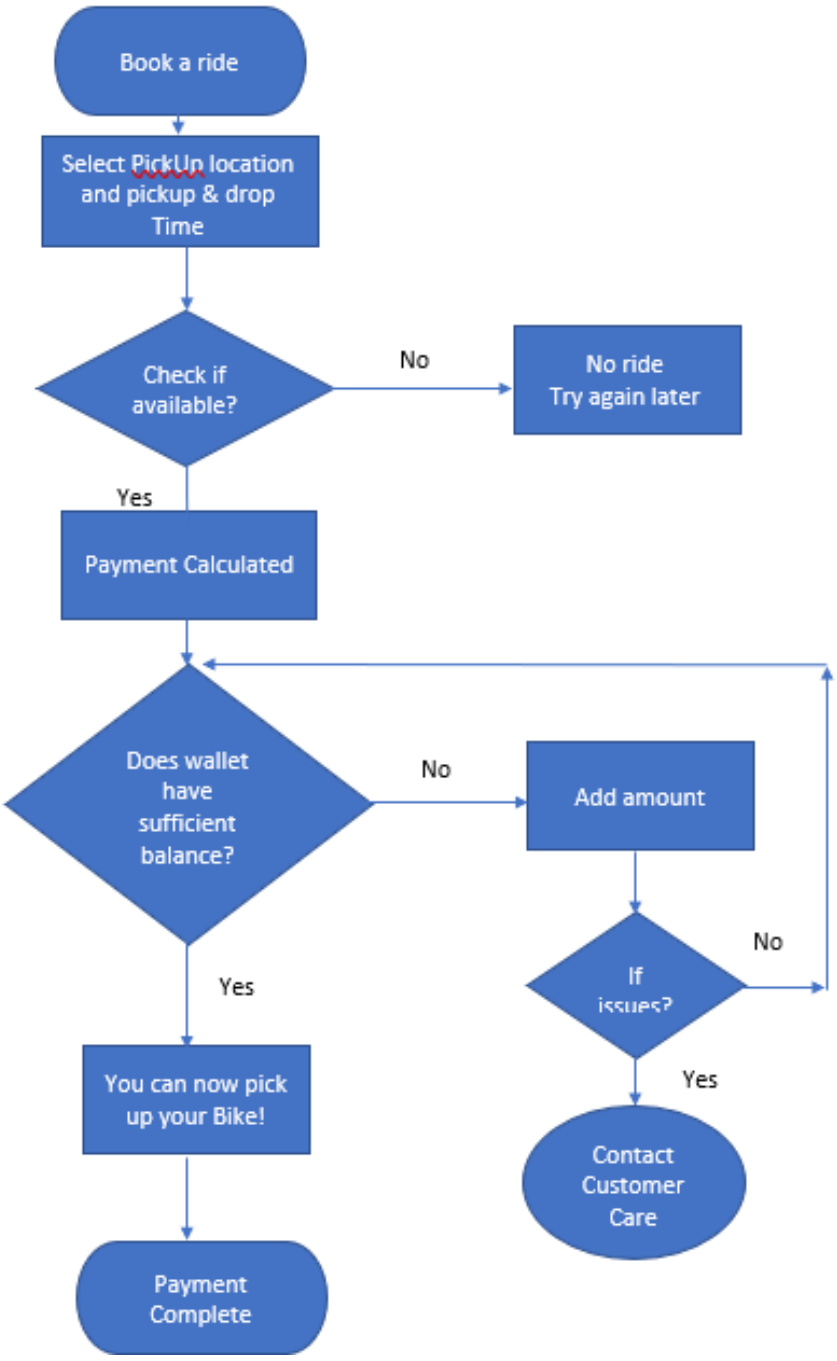
- All Bluebike are currently **functioning only in Boston USA.**
- **One customer** can book only **one bike** at a time.
- Customers will have to return the bike before booking a new bike.
- Customer should possess an app with all his details (especially registered phone number) and wallet setup on the app
- A customer can only a book a ride for certain hours
- Customer cannot book a ride without the amount not being present in the wallet
- The customer returns the bike after the ride at the same dock station and completes the necessary payment
- There are only three membership plans: **Weekly, Monthly, and Yearly Pass**
- Discounts apply to customers who can be members or non-members
- **Membership** and **discounts** can be **null**. It is possible that a customer booking a bike is not a member and is not using any discount while booking a bike.
- **Membership id** is **not unique** to each customer.
- We will have a fixed number of coupons available
- A **single discount** coupon is used during payment per ride
- There can be **only one membership code** for a **customer**
- A dock can have multiple bikes at any given time. A dock can have a minimum of zero bikes when all bikes have been taken by customers.
- All employees including customer care along with reporting managers are known as employees Bluebikes.
- Each **payment** is calculated using the time **difference between drop and pick up** time and multiplicative factors like **rate/hour, discount, and membership factor**
- **Only one wallet ID** per customer
- Multiple Ticket ID’s can be assigned to a single customer

Flow Diagram

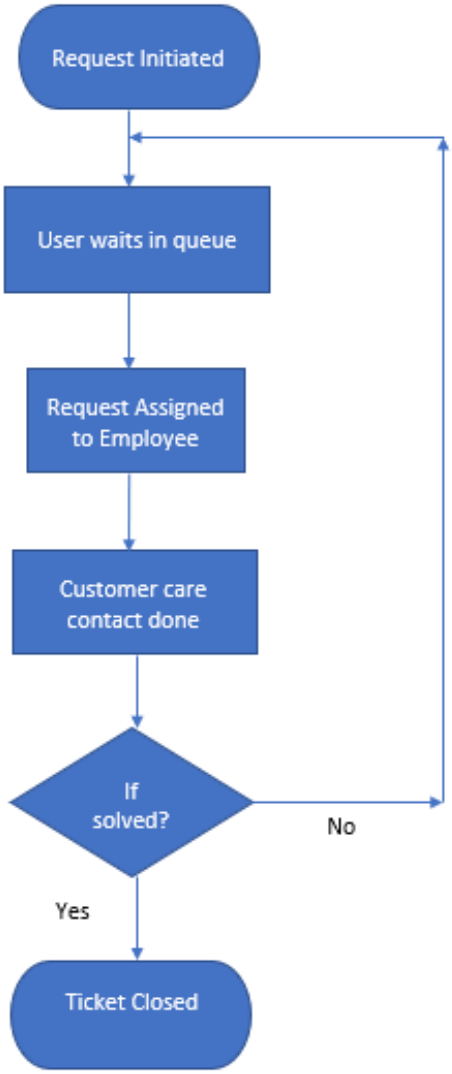
Customer Registration Process



Ride Booking Process



Ticket Handling Process



Security Rules

5 Roles have been created with the respective Table access.

	Table Names								
Role	Customer	Employee	Ticketing	Dock	Wallet	Rent	Membership	Discount	Bike
User	W			R	R		R	R	R
Customer Care	R, W, U		R, U		R, U	R, U	R, W, U	R, W, U	R, W, U
Employee	R		R, U		W	R			
Manager	R	R, W	R, U	R, W	R, W, U				
Admin	R, W, U	R, W, U	R, W, U	R, W, U	R, W, U	R, W, U	R, W, U	R, W, U	R, W, U

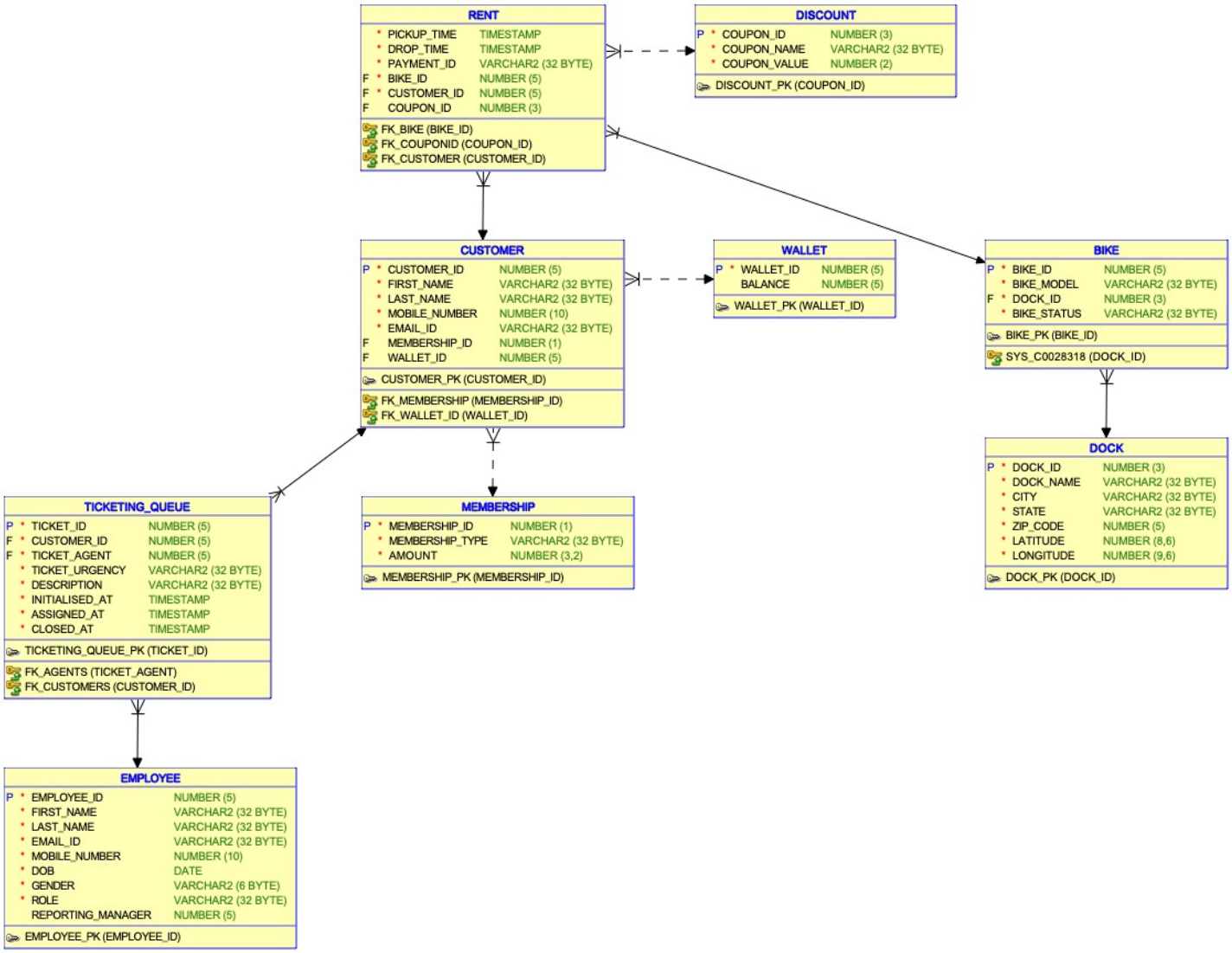
Note: R- Read, W- Write, U- Update, blanks indicate no access

Views

For the 5 Roles we have described below the views the roles will be able to see.

Role Names	View access (tables)	Description
User	Customer, Wallet, Membership, Discount	User will have access to his own details only
Admin	Rent, Discount, Wallet, Bike, Dock, Customer, Membership, Ticketing_Queue, Employee	Admin will have access to all customer details, ticketing queue and employee details
Customer Care	Ticketing_Queue, Customer, Wallet, Rent, Bike, Membership, Discount	Customer Care will have access to customer details, bike details and membership details
Manager	Employee, Ticketing_Queue, Customer, Dock, Wallet	Manager will have access to customer details, employee details, wallet details, ticketing queue
Employee	Wallet, Ticketing_Queue, Customer	Employee will have access to customer details, wallet details and ticketing queue

ER Diagram and Tables



ER Diagram and Tables
Entity Tables:

CUSTOMER

Attributes	Data Type	Comments	Description
CUSTOMER_ID	NUMBER(5)	PRIMARY KEY	A unique ID to identify each customer
FIRST_NAME	VARCHAR(32)	NOT NULL	Customer First name
LAST_NAME	VARCHAR(32)	NOT NULL	Customer Last Name
MOBILE_NUMBER	NUMBER(10)	NOT NULL	Customer Mobile Number
EMAIL_ID	VARCHAR(32)	NOT NULL	Customer Email ID
WALLET_ID	NUMBER(5)	NOT NULL	Customer Wallet ID
MEMBERSHIP_ID	NUMBER(1)	FOREIGN KEY	Customer Membership ID if he possesses any membership

MEMBERSHIP

Attributes	Data Type	Comments	Description
MEMBERSHIP_ID	NUMBER(1)	PRIMARY KEY	A unique ID to identify the kind of membership
MEMBERSHIP_TYPE	VARCHAR(32)	NOT NULL	Membership description eg- weekly, monthly, yearly
AMOUNT	NUMBER(3,2)	NOT NULL	Membership Amount Paid by the Customer

BIKE

Attributes	Data Type	Comments	Description
BIKE_ID	NUMBER(5)	PRIMARY KEY	A unique ID to identify a bike
BIKE_MODEL	VARCHAR(32)	NOT NULL	Model/Design of the bike
BIKE_STATUS	VARCHAR(32)	NOT NULL	Describes whether the bike is available or in use
DOCK_ID	NUMBER(3)	FOREIGN KEY	The Dock ID where the bike is docked

WALLET

Attributes	Data Type	Comments	Description
WALLET_ID	NUMBER(5)	PRIMARY KEY	A unique ID to identify Wallet ID
BALANCE	NUMBER(5)	NOT NULL	Balance of the Wallet

ER Diagram and Tables

DISCOUNT

Attributes	Data Type	Comments	Description
COUPON_ID	NUMBER(3)	PRIMARY KEY	ID of any coupon available
COUPON_NAME	VARCHAR(32)	NOT NULL	Name of any coupon used during the ride
COUPON_VALUE	NUMBER(2)	NOT NULL	Value of the coupon used during the ride

DOCK

Attributes	Data Type	Comments	Description
DOCK_ID	NUMBER(5)	PRIMARY KEY	A unique ID to identify the different docks around the city
DOCK_NAME	VARCHAR(32)	NOT NULL	Dock Name where the bikes are docked
ZIP_CODE	NUMBER(5)	NOT NULL	Zip Code of the location where the doc is present
STATE	VARCHAR(32)	NOT NULL	State where the bike operates
LATITUDE	NUMBER(8,6)	NOT NULL	Latitude of the bike
LONGITUDE	NUMBER(9,6)	NOT NULL	Longitudinal Location of the bike
CITY	VARCHAR(32)	NOT NULL	City where the bike operates

RENT

Attributes	Data Type	Comments	Description
PICKUP_TIME	TIMESTAMP	NOT NULL	The time when a bike was activated/undocked for a ride
DROP_TIME	TIMESTAMP	NOT NULL	The time when a bike was deactivated/docked after a ride
PAYMENT_ID	VARCHAR(32)	NOT NULL	The unique ID used to complete the payment
BIKE_ID	NUMBER(5)	FOREIGN KEY	The bike ID of the bike which was used for the ride
CUSTOMER_ID	NUMBER(5)	FOREIGN KEY	The ID of the Customer using the bike for a ride
COUPON_ID	NUMBER(3)	FOREIGN KEY	ID of any coupon used during the ride

ER Diagram and Tables

EMPLOYEE

Attributes	Data Type	Comments	Description
EMPLOYEE_ID	NUMBER(5)	PRIMARY KEY	Unique ID for each employee
FIRST_NAME	VARCHAR(32)	NOT NULL	Employee First Name
LAST_NAME	VARCHAR(32)	NOT NULL	Employee Last Name
DOB	DATE	NOT NULL	Employee Date Of Birth
GENDER	VARCHAR(6)	NOT NULL	Employee Gender
ROLE	VARCHAR(32)	NOT NULL	Employee Role/ Designation
REPORTING_MANAGER	VARCHAR(32)	NOT NULL	Reporting Manager of the Employee
EMAIL_ID	VARCHAR(32)	NOT NULL	Employee Email ID
MOBILE_NUMBER	NUMBER(5)	NOT NULL	Employee Contact Number

TICKETING_QUEUE

Attributes	Data Type	Comments	Description
TICKET_ID	NUMBER(5)	PRIMARY KEY	A unique Ticket/Issue ID generated whenever any issue is raised by the customer
CUSTOMER_ID	NUMBER(5)	FOREIGN KEY	Customer ID of the customer for whom the ticket is raised
TICKET_AGENT	NUMBER(5)	FOREIGN KEY	The agent ID of the agent who has raised the ticket of the customer
TICKET_URGENCY	VARCHAR(32)	NOT NULL	Issue priority eg :- Easy, High, Medium
DESCRIPTION	VARCHAR(32)	NOT NULL	The description of the issue faced by the customer
INITIALISED_AT	TIMESTAMP	NOT NULL	Time and date when the ticket has been raised
ASSIGNED_AT	TIMESTAMP	NOT NULL	Time and date when the ticket has been assigned to an agent
CLOSED_AT	TIMESTAMP	NOT NULL	Time and date when the ticket has been resolved/closed